

VI TELEFILTER**Filter specification****TFS 840****1/5****Measurement condition**

Ambient temperature:	23	°C
Input power level:	0	dBm
Terminating impedance: *		
Input:	195 Ω	-0.25 pF
Output:	195 Ω	-0.25 pF

Characteristics**Remark:**

The reference level for the relative attenuation a_{rel} of the TFS 840 is the minimum of the pass band attenuation a_{min} . The minimum of the pass band attenuation a_{min} is defined as the insertion loss a_e . The centre frequency f_c is the arithmetic mean value of the upper and lower frequencies at the 3 dB filter attenuation level relative to the insertion loss a_e . The nominal frequency f_N is fixed at 840 MHz without any tolerance. The given values for both the relative attenuation a_{rel} and the group delay ripple have to be achieved at the frequencies given below even if the centre frequency f_c is shifted due to the temperature coefficient of frequency TC_f in the operating temperature range and due to a production tolerance for the centre frequency f_c .

D a t a		typ. value		tolerance / limit	
Insertion loss (reference level)	a_e	3,75	dB	max.	5,5 dB
Nominal frequency	f_N	-		840	MHz
Centre frequency	f_c	840	MHz	-	
Pass band	PB	-		$f_N \pm 20$	MHz
Pass band ripple		1,5	dB	max.	2** dB
Bandwidth 2 dB	BW	49,5	MHz	min.	40 MHz
Relative attenuation	a_{rel}				
f_N	... $f_N \pm 20^{**}$	MHz	-	max.	2 dB
$f_N - 160$	MHz ... $f_N - 740$	MHz	50	dB	min. 40 dB
$f_N + 120$	MHz ... $f_N + 260$	MHz	50	dB	min. 30 dB
$f_N + 260$	MHz ... $f_N + 300$	MHz	50	dB	min. 45 dB
$f_N + 300$	MHz ... $f_N + 660$	MHz	50	dB	min. 40 dB
Operating temperature range	OTR	-		- 25 °C ... + 75 °C	
Storage temperature range		-		- 30 °C ... + 80 °C	
Temperature coefficient of frequency	TC_f ***	-74	ppm/k	-	

*) The minimum bending radius is 45 mm. The mounting surface of the filters faced the bottom side of the embossed carrier tape. Markings on the filters can be read if the upper side of the carrier tape is regarded with the sprocket holes on its right.

***) this parameter is guaranteed at ambient temperature (23°C) only.

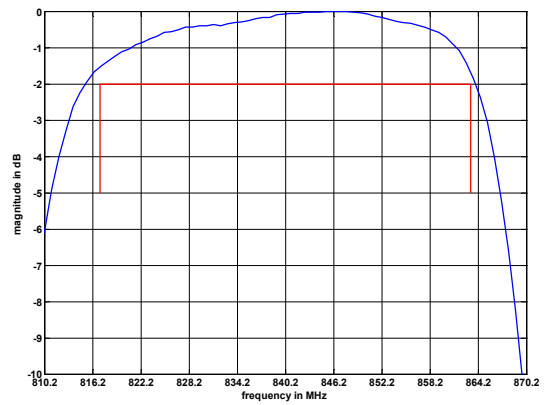
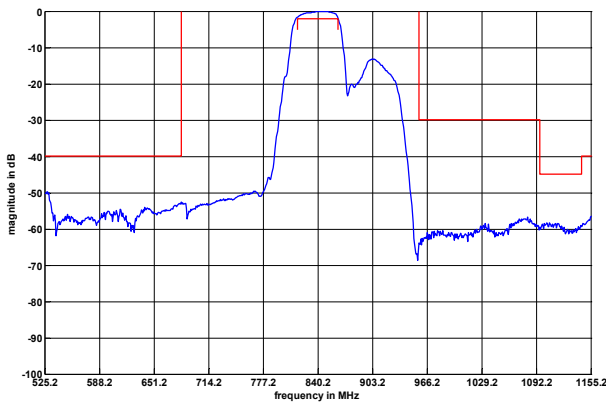
***) $\Delta f(\text{Hz}) = TC_f(\text{ppm/K}) \times (T - T_0) \times f_{T0}(\text{MHz})$

Generated:**Checked / Approved:**

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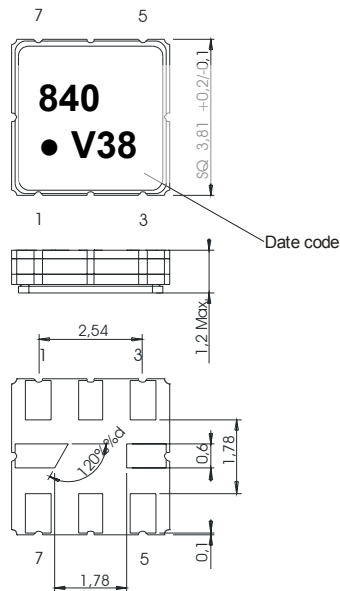
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Filter characteristic



Construction and pin connection

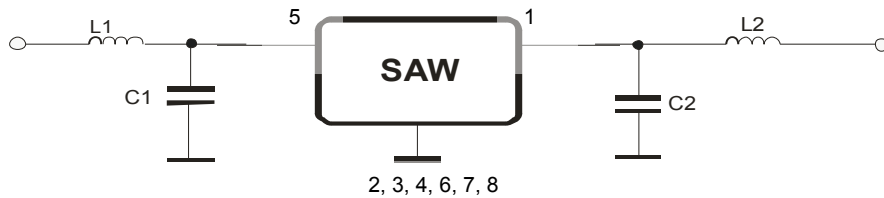
(All dimensions in mm)



- 1 Input
- 2 Ground
- 3 Ground
- 4 Ground
- 5 Output
- 6 Ground
- 7 Ground
- 8 Ground

Date code: Year + week
 V 2007
 W 2008
 X 2009
 ...

50 Ω Test circuit



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Stability characteristics, reliability

After the following tests the filter shall meet the whole specification:

1. Shock: 500g, 1 ms, half sine wave, 3 shocks each plane;
DIN IEC 68 T2 - 27
2. Vibration: 10 Hz to 500 Hz, 0,35 mm or 5 g respectively, 1 octave per min, 10 cycles per plan, 3 plans;
DIN IEC 68 T2 - 6
3. Change of temperature: -55 °C to 125°C / 30 min. each / 10 cycles
DIN IEC 68 part 2 – 14 Test N
4. Resistance to solder heat (reflow): reflow possible: three times max.;
for temperature conditions refer to the attached "Air reflow temperature conditions" on page 4;

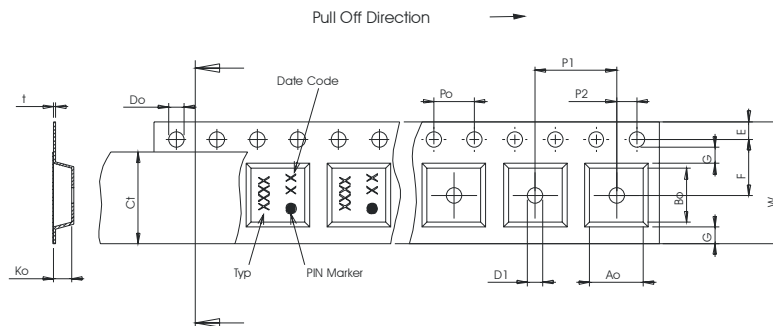
This filter is RoHS compliant (2002/95/EG, 2005/618/EG)

Packing

- Tape & Reel: IEC 286 – 3, with exception of value for N and minimum bending radius;
tape type II, embossed carrier tape with top cover tape on the upper side;
- | | |
|---|-------------|
| max. pieces of filters per reel: | 3000 |
| reel of empty components at start: | min. 300 mm |
| reel of empty components at start including leader: | min. 500 mm |
| trailer: | min. 300 mm |

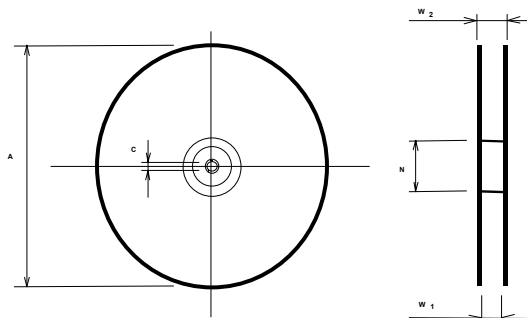
Tape (all dimensions in mm)

- W : 12,00 ± 0,3
- Po : 4,00 ± 0,1
- Do : 1,50 +0,1/-0
- E : 1,75 ± 0,1
- F : 5,50 ± 0,05
- G(min) : 0,75
- P2 : 2,00 ± 0,05
- P1 : 8,00 ± 0,1
- D1(min) : 1,50
- Ao : 4,30 ± 0,1
- Bo : 4,30 ± 0,1
- Ct : 9,5 ± 0,1



Reel (all dimensions in mm)

- A : 330
- W1 : 12,4 +2/-0
- W2(max) : 18,4
- N(min) : 50
- C : 13,0 +0,5/-0,2



The minimum bending radius is 45 mm.

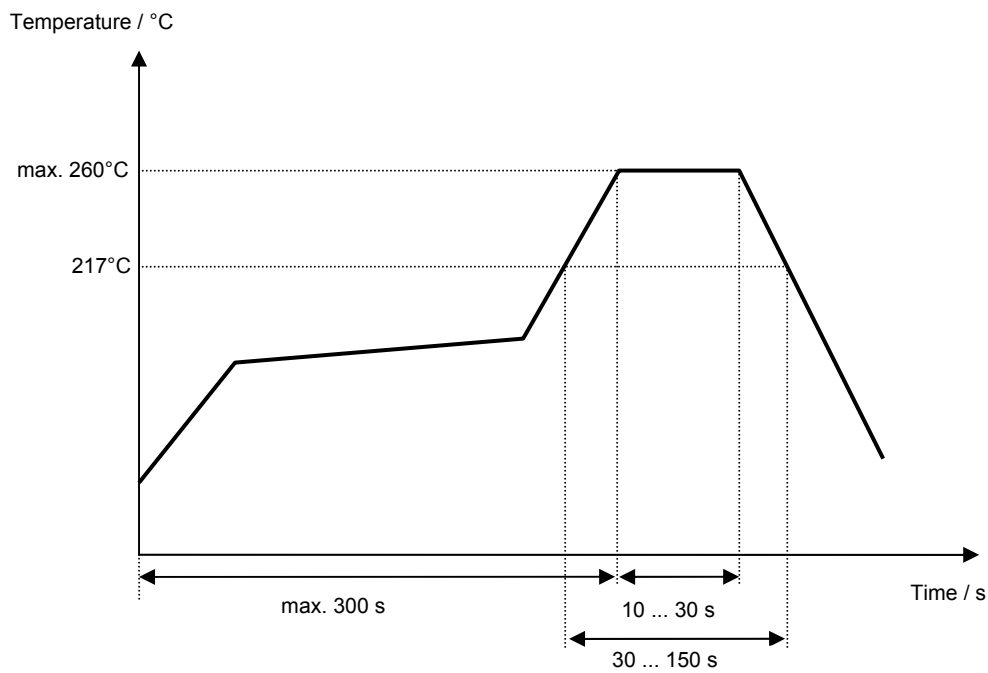
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Air reflow temperature conditions

Conditions	Exposure
Average ramp-up rate (30°C to 217°C)	less than 3°C/second
> 100°C	between 300 and 600 seconds
> 150°C	between 240 and 500 seconds
> 217°C	between 30 and 150 seconds
Peak temperature	max. 260°C
Time within 5°C of actual peak temperature	between 10 and 30 seconds
Cool-down rate (Peak to 50°C)	less than 6°C/second
Time from 30°C to Peak temperature	no greater than 300 seconds

Chip-mount air reflow profile



VI TELEFILTER**Filter specification****TFS 840****5/5****History**

Version	Reason of Changes	Name	Date
1.0	- Generation of development specification according to customer specification	Dr. Sabah	29.08.2001
1.1	- Change of relative attenuation	Dr. Sabah	13.09.2001
1.2	- Add of terminating Impedance and typ. values; Filter Specification	Dr. Sabah	02.09.2002
1.3	- Filter Specification, correct of 2 dB define - Clarify parameter of relative attenuation in pass band, and pass band ripple - Package height max. 1,2mm	Dr. Sabah	21.02.2003
1.4	- add filter characteristic and reliability	S. Channaa	21.09.2007